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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,279	10/15/2001	Genji Imai	011382	1120
23850	7590	03/25/2004		
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006				
			EXAMINER THORNTON, YVETTE C	
			ART UNIT 1752	PAPER NUMBER

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/976,279

Applicant(s)

IMAI, GENJI

Examiner

Yvette C. Thornton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12162003.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

This is written in reference to application number 09/976279 filed on October 15, 2001 which was published as US 2002/0068237 A1 on June 6, 2002.

#### *Information Disclosure Statement*

1. The Information Disclosure Statement filed on December 16, 2003 has been considered.

#### *Oath/Declaration*

2. The examiner acknowledges the declaration submitted pursuant to 37 CFR 1.132 by inventor Genji Imai on December 16, 2003.
3. The said declaration is sufficient to overcome the rejections set forth in the previous office action over Imai et al. (US 6,140,025 A).

#### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogiso et al. (US 6,106,999 A) in view of Makoto et al. (JP 09-138502 A, machine translation). Ogiso teaches a visible light photocurable composition containing (A) a photocurable resin, (B) a photoreaction initiator and (C) a photosensitizer of formula (1) (abstract). Ogiso puts on particular restriction on the photocurable resin as long as it is

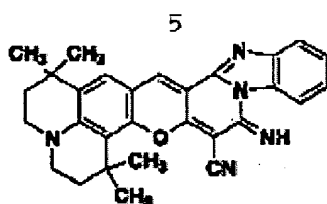
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usually usable and photocurable resin having a photosensitive group which can crosslink by light irradiation (c. 57, l. 7-c. 58, l. 50). Examples of the photoreaction initiator include a light radical polymerization initiator, a light acid generator or a light base generator (c. 57, l. 1-6; c. 58, l. 51-c. 59, l. 46). The amount of photoreaction initiator is preferably in the range of 0.2-10 parts by weight (pbw) with respect to the solid content of the photocurable resin (c. 59, l. 47-55). It is the examiner's position that a light acid generator meets the limitation of a photoacid generator. The taught visible light curable resin contains at least one of the dipyrromethene boron complex compounds represented by formula (1) as the photosensitizer and it may contain another conventional known photosensitizer (c. 59, l. 56-60). No particular restriction is put on the known photosensitizer so long as it is usually used. The amount of photosensitizer (C) to be used depends on the kind of photosensitizer as well as the kind of photocurable resin (A), which can interact with the photosensitizer. If the amount of photosensitizer is less than 0.1 pbw, the photosensitivity of the formed coating tends to deteriorate and if it is more than 10 pbw, it is difficult to keep the composition in a uniform state from the viewpoint of solubility (c. 60, l. 10-22).

The taught components are dispersed or dissolved in a solvent (inclusive of water) to prepare a photosensitive solution and this solution is applied onto a substrate by use of a coating device and then dried (c. 64, l. 20-27). Examples of suitable solvents include ketones, aromatic hydrocarbons, alcohols and water (c. 64, l. 28-c. 65, l. 4). The coated film is then exposed to visible light, and the unexposed portion is then removed by the developing treatment thereby forming an image (c. 66, l. 52-58). See also c. 67, l. 28-52.

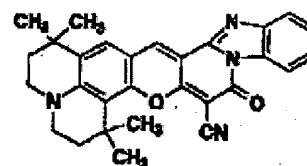
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Ogiso as discussed above teaches all the limitations of the instant claims except it fails to teach a photosensitizer which is a benzopyran condensed ring compound. Makoto et al. (JP 09-138502 A, machine translation) teaches a series of benzopyran ring condensation compound guided from a 3-benzimidazolyl-2-imino coumarin compounds which show photosensitization ability to light with a wavelength of 500 nm or more (p. 0008). Specific compounds include formulae 5-6, 8-10 and 15 (p. 0016-0026). Formula 5 having the



structure:

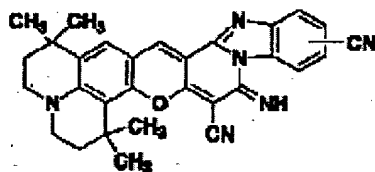
(5) meets the limitations of claimed formula (1) when



Y=NH, R1=H and R2=H. Formula 6 having the structure:

(6)

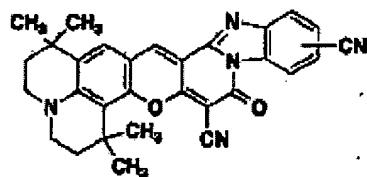
meets the limitations of claimed formula (1) when Y=O, R1=H and R2=H. Formula 8



having the structure:

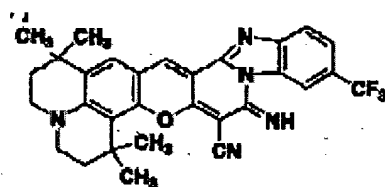
(8) meets the limitations of claimed

formula (1) when Y=NH, R1=H and R2=CN. Formula 9 having the structure:



(9) meets the limitations of claimed formula (1) when Y=O,

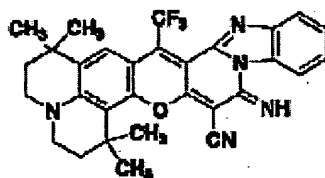
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R1=H and R2=CN. Formula 10 having the structure:

(10)

meets the limitations of claimed formula (1) when Y=NH, R1=H and R2=CF3. Formula 15



having the structure:

(15) meets the limitations of claimed

formula (1) when Y=NH, R1=CF3 and R2=H.

One of ordinary skill in the art would have been motivated by the teachings of Ogiso to incorporate any well known and convention photosensitizer into the taught composition in combination with the taught benzopyran photosensitizer (c. 59, l. 56-60). Makoto serves to establish that the benzopyran compounds are well known and conventional in the art.

One of ordinary skill would have been motivated to incorporate any one of the benzopyran ring condensed compounds of formulae 5-6, 8-10 and 15 of Makoto into the composition of Ogiso as the additional photosensitizer (c. 59, l. 56-60) in order to improve the photosensitizing ability of the taught composition to visible light greater than 500 nm.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogiso et al. (US 6,106,999 A) in view of Makoto et al. (JP 09-138502 A, machine translation) as applied to claims 1-4 and 6-10 above, and further in view of Uno et al. (US 6,277,541 B1). Ogiso as discussed above teaches all the limitations of the instant claims except it fails to teach a photoacid proliferating agent (D) as set forth in instant claim 5. Ogiso does however teach that additives can be added to the taught composition such as adhesion improvers,

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plasticizers and fluidity adjusters (c. 61, l. 39-50). Uno teaches that cyclic acid anhydrides, phenols and organic acids are added to photosensitive compositions to increase sensitivity and improve development properties. Suitable examples of organic acids include sulfonic acids such as p-toluenesulfonic acid, dodecylbenzensulfonic acid and carboxylic acids such as benzoic acid, phthalic acid and 1,4-cyclohexene-2,2-dicarboxylic acid (c. 26, l. 39-65). One of ordinary skill in the art would have been motivated by the teachings of Uno to incorporate an organic acid into the exemplified composition of Ogiso in order to improve sensitivity and development properties. It is the examiner's position that the taught organic acids meet the limitation of the claimed organic acid ester of instant claim 5.

#### *Response to Arguments*

7. Applicant's arguments, filed December 16, 2003, with respect to the rejection(s) of claim(s) 1-10 under 35 USC 102(e) over Imai et al. (US 6,140,025 A) have been fully considered and are persuasive. The declaration submitted pursuant to 37 CFR 1.132 by inventor Genji Imai is sufficient to overcome the rejections set forth in the previous office action over Imai et al. (US 6,140,025 A). Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made as stated above.

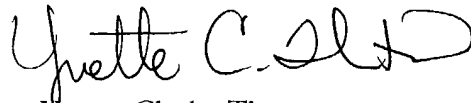
#### *Conclusion*

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette C. Thornton whose telephone number is 571-272-1336. The examiner can normally be reached on Monday-Thursday from 8:00 am to 6:30 pm.

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9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F. Huff, can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Yvette Clarke Thornton  
Patent Examiner  
Art Unit 1752

yct  
March 15, 2004